

## CLAIMS

1. A data transmission apparatus carrying out telecommunications with another apparatus via different transmission paths for transmission and reception, the apparatus comprising:

a receiver for receiving a signal transmitted from another apparatus via a transmission path for reception;

a signal processing unit for generating a transmission signal based on transmission data in synchronization with the reception signal received by the receiver;

a transmitter for transmitting the transmission signal generated in the signal processing unit to another apparatus via a transmission path for transmission; and

a phase control unit for adjusting a phase of the transmission signal to set a phase difference between the reception signal received by the receiver and the transmission signal to be transmitted by the transmitter to a predetermined value.

2. The data transmission apparatus according to claim 1, wherein the phase control unit includes:

a phase detection unit for detecting a phase of the reception signal; and

a timing control unit for controlling timing for the signal processing unit to generate the transmission signal in accordance

with a detection result of the phase detection unit.

3. The data transmission apparatus according to claim 2,  
wherein

5 the phase control unit further includes a phase adjustment  
unit for adjusting the phase by delaying the transmission signal  
generated in the signal processing unit by a predetermined amount.

4. The data transmission apparatus according to claim 1,  
10 wherein

the transmission paths are twisted pair cables, and  
the phase control unit sets the predetermined value to a  
phase difference for reducing radiation noise due to crosstalk  
between a common-mode signal generated in a twisted pair cable  
15 for reception and a common-mode signal generated in a twisted pair  
cable for transmission.

5. The data transmission apparatus according to claim 4,  
wherein  
20 the predetermined value is 90 degrees or 270 degrees.

6. A data transmission method for carrying out  
telecommunications with another apparatus via different  
transmission paths for transmission and reception, the method  
25 comprising:

a reception step of receiving a signal transmitted from another apparatus via a transmission path for reception,

a generation step of generating a transmission signal based on transmission data in synchronization with the reception signal  
5 received in the reception step,

a setting step of adjusting a phase of the transmission signal for setting a phase difference between the reception signal received in the reception step and the transmission signal generated in the generation step to a predetermined value, and

10 a transmission step of transmitting the transmission signal whose phase adjusted in the setting step to another apparatus via a transmission path for transmission.

7. A semiconductor integrated circuit, in which a circuit  
15 for carrying out telecommunications with another apparatus via different transmission paths for transmission and reception is integrated on a semiconductor substrate, the semiconductor integrated circuit comprising:

a reception circuit for receiving a signal transmitted from  
20 another apparatus via a transmission path for reception;

a signal processing circuit for generating a transmission signal based on transmission data in synchronization with the reception signal received by the reception circuit;

a transmission circuit for transmitting the transmission  
25 signal generated by the signal processing circuit to another

apparatus via a transmission path for transmission; and

a phase control circuit for adjusting a phase of the transmission signal to set a phase difference between the reception signal received by the reception circuit and the transmission signal to be transmitted by the transmission circuit to a  
5 predetermined value.